

## PATENT SPECIFICATION

DRAWINGS ATTACHED

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Helikopf-  
Motor

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## COMPLETE SPECIFICATION

## Load-handling Tackle for a Lifting Device

I, LEON FOULQUIER, of 4bis, Avenue de la Jonchère, La Celle St-Cloud, (Seine-et-Oise), France, a French Citizen, do hereby declare the invention for which I pray that

5 a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to load-handling tackle for a lifting device.

In building operations, use may be made of framework platforms onto which concrete or other material is cast for the purpose of constructing floors *in situ*. Platforms of this

15 type may be disposed between walls or partitions and rest on a previously constructed floor so that after the new floor has been cast, the platforms are often not readily accessible for removal which accordingly may become

20 a difficult, not to say dangerous, operation. The present invention has been made with the problems of removing framework platforms particularly in mind, and consists of a block-and-tackle arrangement for a lifting

25 device which simplifies the handling of loads, such as framework platforms, which cannot easily be lifted directly from one position to another.

30 The load-handling tackle in accordance with the invention comprises a block adapted to be suspended from the lifting device and, fixed at each end to the block, a load chain carrying a pair of load-bearing pulleys between which the chain passes over a rotatable

35 sheave carried by the block so that the chain is formed into two loops, the sheave being connected to a drive whereby the sheave can be rotated to lengthen either one of the loops whilst the other loop is shortened by a

40 corresponding amount. In a preferred form of the invention, the block is formed of two spaced housings rigidly connected together and between which is mounted the rotatable sheave which is

keyed to the output shaft of reduction gearing disposed in one of the housings and which, in turn, is controlled by the drive which is disposed in the other housing. Conveniently the drive comprises a pulley which is made

45 fast to a hand wheel over which an operating chain is reeved. The application of the tackle in accordance with the invention to the handling of comparatively inaccessible loads will become

50 apparent from what follows, in which, by way of example, a preferred embodiment of the invention is described with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of the tackle according to the invention being applied to

55 the handling of a framework platform; Figure 2 shows a front elevation of the tackle shown in Figure 1, but on a larger scale;

Figure 3 is a section on the line III—III of Figure 2, and

60 Figures 4 to 8 illustrate diagrammatically different stages of handling of a framework platform using the tackle shown in Figures 1 to 3.

Referring to Figures 1 to 3, there is shown load-handling tackle, generally designated 1 which comprises a block 2, which will be described in greater detail hereinbelow, and to which a chain 3 is fixed in such a manner as to constitute two loops 4 and 5 carrying plain loose pulleys 6 and 7 which are adapted to receive the end portions 8, 9 of slings 10 having at their other ends hooks intended to co-operate with hooks 11 made fast to a framework platform 12 for the *in situ* construction of floors. The platform 12 is supported on a frame 14 provided with rollers 13.

Reference will now be made to Figures 2 and 3, in which the tackle is illustrated in greater detail. It is seen that the tackle comprises two housings 16 and 17 having

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side plates 18 and 19 disposed one opposite the other. These housings are spaced apart by means of top braces 20 and bottom braces 21. At the top the block 2 is equipped with brackets 22, 23, between which the top braces 20 are disposed. These brackets have at their upper ends a shaft 24 intended to receive a lifting ring 25. The bottom braces 21 are disposed between flat iron bars 26 made fast to bottom horizontal cross-members 27 which in turn are connected by their ends to vertical members 28 fixed to the side plates 18, 19 and also to the lateral sides of each of the housings. Bolts 29 passing through the housings 16 and 17 and engaged in the top and bottom braces effect the connection of these housings.

A rigid connection of the housings is thus obtained, the braces making it possible to provide between their respective side plates a space to receive a load sheave 30 equipped with sprockets and keyed on the output shaft of reduction mechanism (not shown), which is disposed inside the housing 17. Also contained within the space between the housings are plain grooved guide pulleys 31, 32 mounted rotatably on shafts towards the end of the bottom cross-members 27.

The reduction mechanism, which is preferably of the automatic brake type, is associated, for example by means of a hollow shaft (not shown), with a spacing member in the form of a pulley 34 and an operating wheel 35 disposed in the housing 16. The pulley 34 and wheel 35 are connected to one another and the wheel 35 is driven by means of a small operating chain 15 reeved over the wheel which thereby drives the pulley 34.

The load chain 3 is fixed to the block 2 at one end to a shaft 36 and at its other end to a shaft 37; these shafts have protective reinforcing bushes 38 forming braces and are disposed towards the top ends of the members 28. The chain 3 passes over loose pulleys 6, 7, each of which is provided with a stirrup 39 intended on the one hand to hold them in position on the chain and on the other hand to form the hooking means, for example for connection to sling ends indicated at 8, 9.

As shown in Figure 2 the chain 3 is assumed to be under load and its path between its points of fastening on the block 2 is then as follows:

Starting from the fastening point 36 the chain first passes around the loose pulley 6 which forms the end of the loop 4, and then rises towards the grooved pulley 31 which guides it to the sprocketed load sheave 30 which constitutes the driving means; on leaving the load sheave, the chain is taken over and guided by the pulley 32 to the pulley 7 which forms the end of the loop 5, and then passes around said pulley and rises to its second fastening point 37.

By means of this arrangement a load chain of constant length is obtained, while however the loops 4 and 5 may be varied in length by the operation of the chain 15 which drives the load sheave, the lengthening of one loop leading automatically to a corresponding shortening of the other loop.

An example of the use of the tackle described above is illustrated in Figures 4 to 8, in which are shown the various stages in the removal of a framework platform using the tackle. The tackle, it should be understood, is not limited to this application, but on the contrary could be used for lifting other kinds of loads, particularly where there are problems of access.

Referring to Figure 4, it is seen that a platform 12 is in a position in which it has formed the framework for a floor P cast *in situ* onto it, the rollers 13 being raised during the casting of the floor P, previously constructed. When the material of the floor P has set, the platform 12 is lowered so that its rollers 13 rest on the floor P, in which position the framework is out of contact with the floor P (see Figure 5). In order to remove the platform 12 the procedure is as follows:

In the first stage (see Figure 6) the platform 12 is moved so that one set of hooks 11 provided on it become accessible from outside the building. A lifting device such as a crane (not shown) brings the tackle 1 a predetermined distance above the hooks. The loop 5 of the load chain 3 is then hooked in place by means of the slings 10, and then with the aid of the operating chain 15 this length is slightly tensioned, with the result that the loop 5 is shortened while the loop 4 rests on the floor P. At this moment the platform 12 rests by its rollers 13 on the bottom floor P, and its centre of gravity is situated inside the building. The tensioning of the loop 5 makes it possible for the platform to be rolled further in the direction of the arrow F (Figure 6), while at the same time the rope 42 of the lifting device is slightly shifted, the platform coming into the position shown in Figure 7.

In this figure it is seen that on the one hand the platform is suspended from the rope 42 of the lifting device by means of the tackle 1 and on the other hand rests by its rear rollers 13 on the floor P, the centre of gravity G being outside the building; in this position the rear hooks 11 are accessible and the slings 10 of the loop 4 of the load chain 3 can then be hooked in place. At the beginning of this last operation, the operating chain 15 is seized by an operator and manipulated so as to bring loops 4 and 5 into a position in which they are of equal length, which has the effect of placing the tackle 1 in line with the centre of gravity G of the platform. In the last stage (Figure

8) the lifting device slightly raises the platform and the latter can be repositioned for immediate reuse or else transferred to store.

WHAT I CLAIM IS:—

- 5 1). Load-handling tackle for a lifting device, comprising a block adapted to be suspended from the lifting device and, fixed at each end to the block, a load chain carrying a pair of load-bearing pulleys between which  
10 the chain passes over a rotatable sheave carried by the block so that the chain is formed into two loops, the sheave being connected to a drive whereby the sheave can be rotated to lengthen either one of the loops  
15 whilst the other loop is shortened by a corresponding amount.

- 2). Tackle according to Claim 1 in which the block is formed of two spaced housings rigidly connected together and between which  
20 is mounted the rotatable sheave which is keyed to the output shaft of reduction gearing disposed in one of the housings and which, in turn, is controlled by the drive which is disposed in the other housing.

- 25 3). Tackle according to Claim 1 or Claim 2 in which the drive comprises a pulley which is made fast to a wheel over which an operating chain is reeved.

- 4). Tackle according to Claim 2 or Claim 3 in which each housing carries a pulley  
30 which guides the chain towards the rotatable sheave.

- 5). Tackle according to Claim 2 or any Claim appendant thereto in which the ends of the load chain are fixed to braced members  
35 extending between the two housings.

- 6). Tackle according to any preceding Claim in which the block is provided at its upper end with a pair of brackets which carry a ring from which the tackle can be suspended from the lifting device.  
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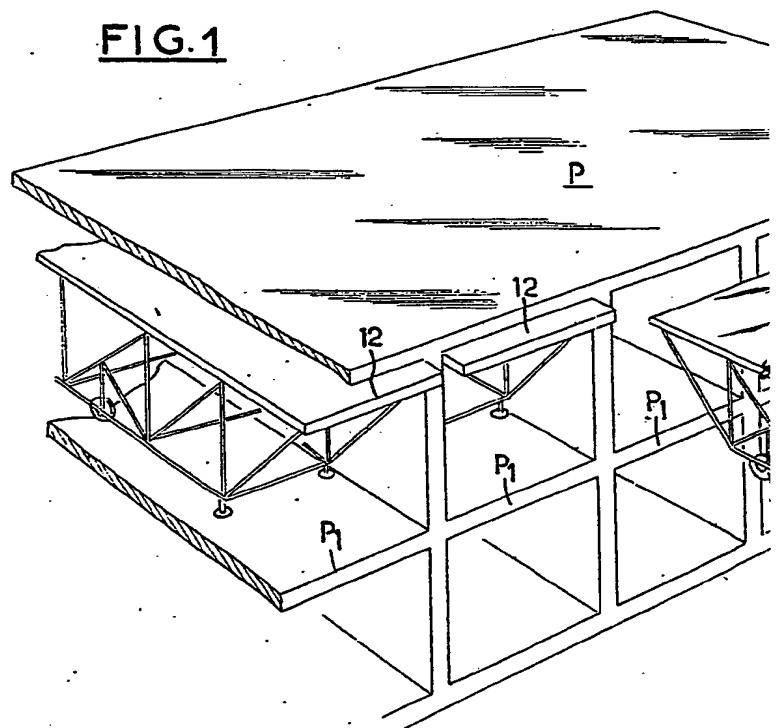
- 7). Tackle according to any preceding Claim in which the load-bearing pulleys each carry a stirrup by which they can be attached to the load.  
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- 8). Load-handling tackle for a lifting device substantially as described herein with reference to Figures 1 to 3 and Figures 6 to 8 of the accompanying drawings.

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FIG.1



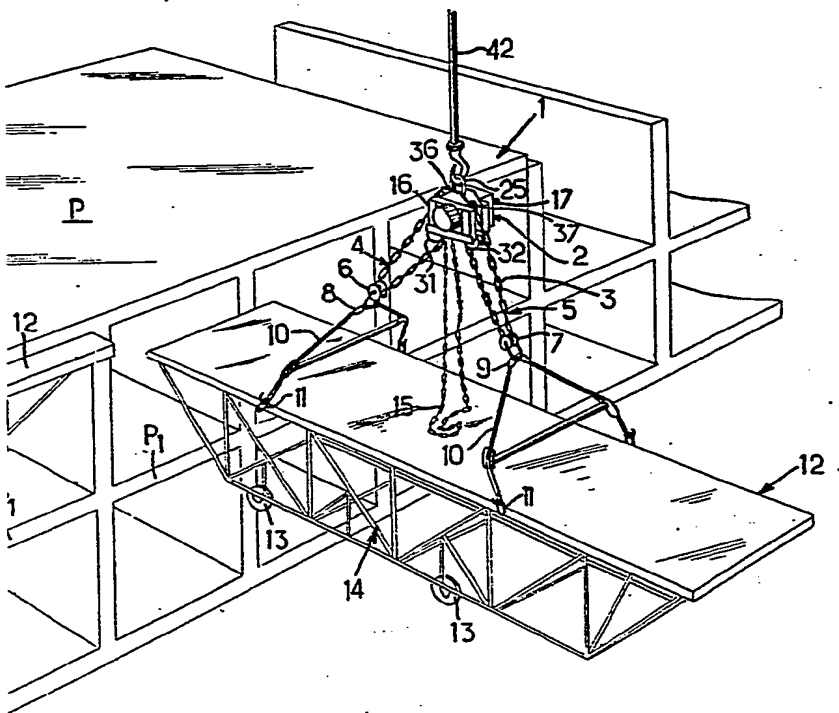
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3 SHEETS

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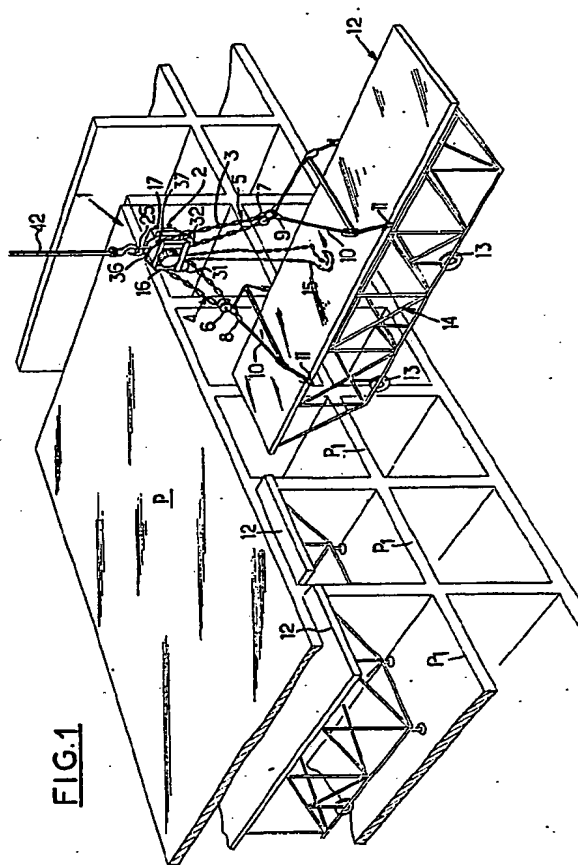
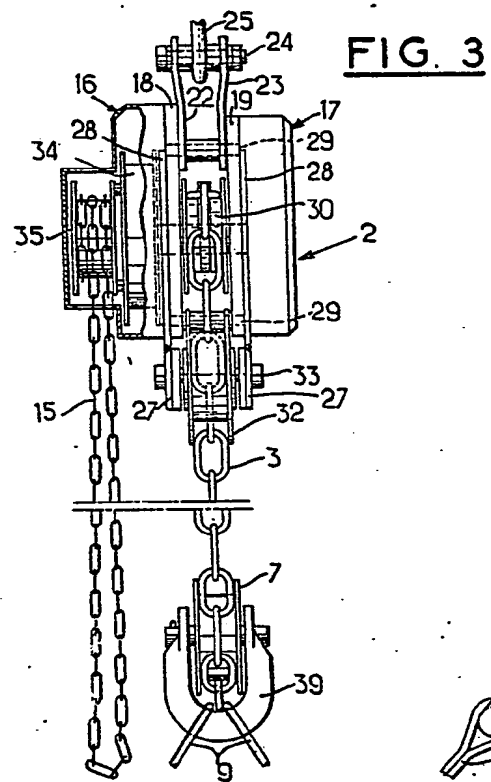
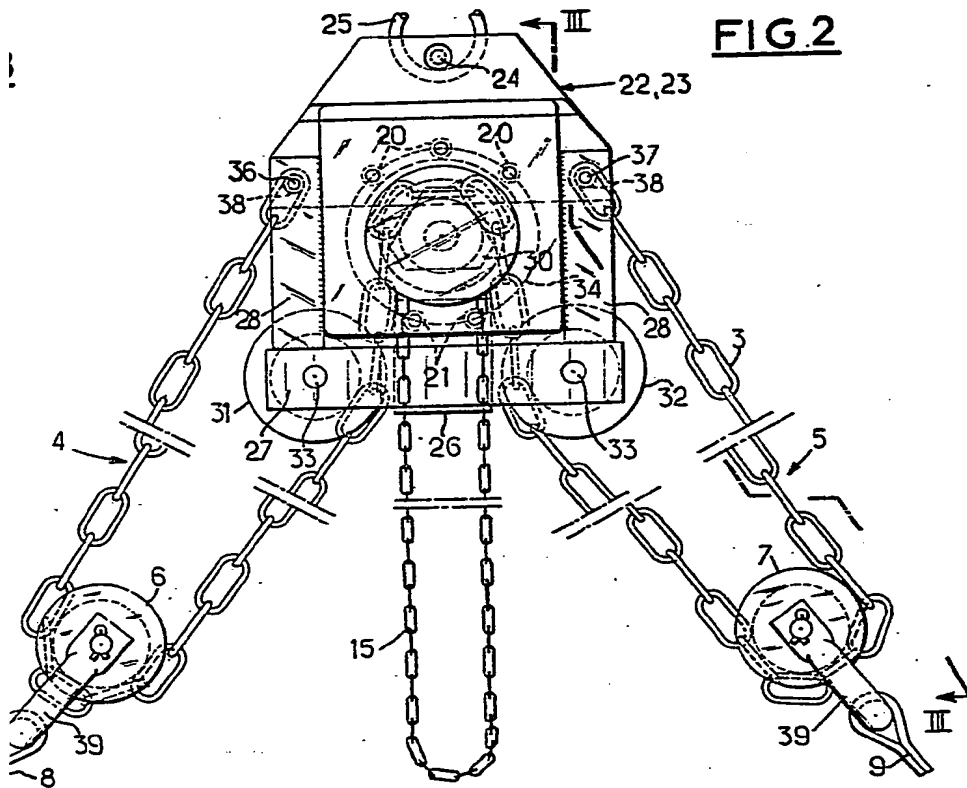


FIG. 1

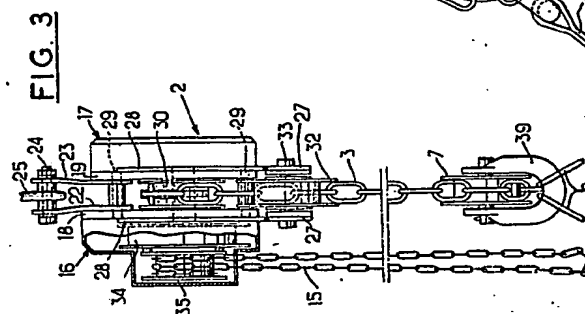
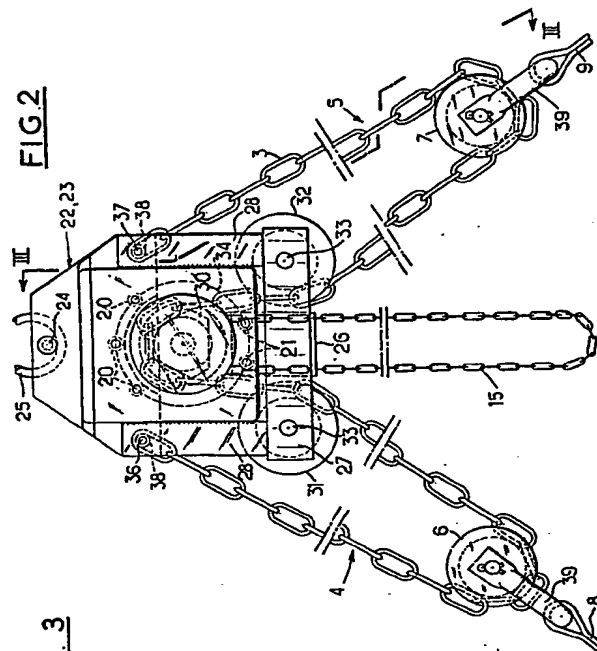


**3 SHEETS**

*This drawing is a reproduction of  
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**Sheet 2**







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COMPLETE SPECIFICATION

3 SHEETS

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Sheet 3

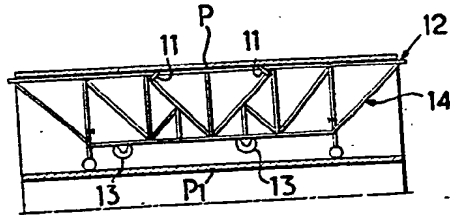


FIG. 4

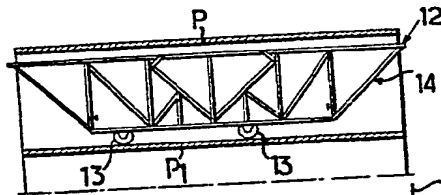


FIG. 5

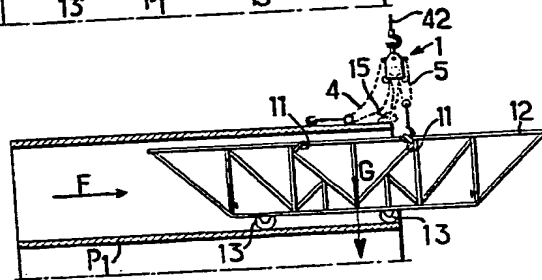


FIG. 6

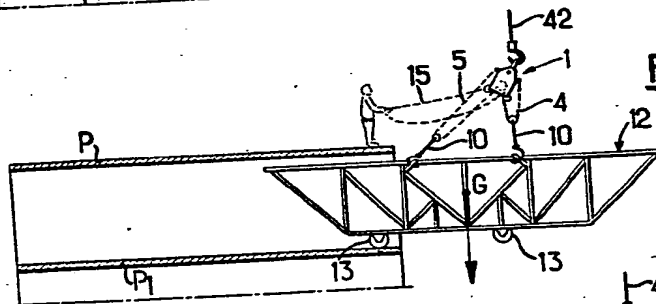


FIG. 7

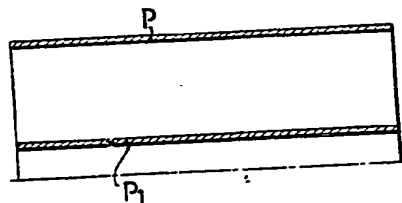


FIG. 8

